

ABSTRACT

The use of UWB antennas has recently been increasing as there are a number of advantages they have. Along with the increasing demand, there has also been some development towards the antennas. In February 2002, The Federal Communications Commission (FCC) UWB technology used the frequency band of 3.1 – 10.6 GHz adding an unnecessary large average value to the antenna. However, it made the antenna inefficient. Besides, it also affected the directivity. The directivity then affected some increase in gain, i.e. the greater the gain, the sharper radiation pattern produced. It then made the energy emitted focused on the direction of the main beam and enabled energy to select a larger place.

Therefore, this study is focused on designing Artificial Magnetic Conductor (AMC) dimension in order to have some gain improvement. By sampling a number of UWB working antenna frequencies, it can be seen that there is an average increase in the gain of the antenna. However, VSWR and radiation pattern are also monitored in this study. However, a prototype of an antenna is also needed to be designed for validation. In this study, the prototype is calculated and compared with the simulation results.

This study has a circular planar monopole antenna with artificial magnetic conductor (AMC) as the product. However, it uses FR-4 substrate for ultra-wideband. From the study it is known that UWB antenna improves the gain at the entire UWB range and it reaches a peak gain of 14.51 dBi at 3.6 GHz while miniaturized structure with high gain makes this design is good to use, especially for outdoor UWB application.

Keywords: Ultra-wideband(UWB), Gain, VSWR, Radiation Pattern, Planar Monopole Antenna, Artificial Magnetic Conductor(AMC)